

REMARKS

Applicants appreciate the thoroughness with which the Examiner has examined the above-identified application. Reconsideration is requested in view of the amendments above and the remarks below.

Nonelected species

Applicant has withdrawn claims 6, 9, 13, 20-36, 44-49, 51 and 53 in view of the Examiner's determination that these claims are to patentably distinct species.

Claim objection

The Examiner has objected to claim 8, originally dependent on claim 7, as reciting subject matter inconsistent with claim 7. Applicant has amended claim 8 to be dependent on claim 1.

Rejection under 35 USC § 102

Claims 1, 4, 5, 10, 11 and 52

Claim 1, and dependent claims 4, 5, 10, 11 and 52, stand rejected under 35 USC § 102 as being anticipated by Tamura U.S. Patent No. 4,546,822. Applicant respectfully traverses this rejection.

Claim 1 has been amended to recite that the sealing material being utilized is a silicone sealing material, to provide the flexible, bonded, liquid tight, tube-to-header joint. Unlike applicant's claimed method, Tamura discloses only a thermosetting, epoxy resin-based adhesive. Tamura uses the epoxy to embed not only the tube ends, but also the fins adjacent the tube ends, to create a bond. Applicant by contrast recites a flexible, liquid tight, seal for the tube-to-header joint, which he has found requires the use of a silicone sealing material. Tamura does not disclose the need for flexibility in a

tube-to-header joint, and therefore does not disclose, suggest, or render obvious applicant's invention as defined by claim 1.

Claims 12 and 50

Claims 12 and 50 stand rejected under 35 USC § 102 as being anticipated by Jones U.S. Patent Publication No. 2002/0144808. Applicant respectfully traverses this rejection.

Claim 12 is directed to a method of making a heat exchanger, and has been amended to state that the tank is "assembled with" the header. Support is found in the specification at page 16, lines 11-12 where it is stated that "The tank 44, the header 51 and the tubes 17 are assembled before applying the silicone." No new matter is added.

Applicant's method of making a heat exchanger as recited in claim 12 assembles the tank, header and tubes, and then applies silicone between the tank and header to connect them. This is unlike the Jones patent publication, in which the adhesive is applied before the tank and end plate are mated. See Jones, para. 0013. Jones does not disclose or suggest applicant's method as described in claim 12.

Claims 13 and 51 recite that the tubes are attached to the header by brazing, which is also not disclosed in the Jones patent publication.

The instant application is a divisional of parent application serial no. 09/847,144 filed on May 2, 2001, now U.S. Patent No. 6,719,037 issued on April 13, 2004. Notwithstanding the differences between the claimed invention and the Jones patent publication, applicant encloses a declaration by the inventor under 37 CFR § 1.131 to swear behind the reference dates of Jones. The declaration and attached exhibit establish facts showing conception of this invention in this country prior to the April 4, 2001 reference date of Jones, and due diligence from a time prior to that date

until the parent of the instant application was filed and constructively reduced to practice on May 2, 2001.

The inventor's declaration establishes that each and every limitation of claims 12 and 50 is disclosed in the Disclosure attached as Exhibit A. The following chart compares the invention of claims 12 and 50 with the teachings in the Disclosure of Exhibit A:

CLAIM 12	DISCLOSURE
A method of making a heat exchanger comprising the steps of:	"[A] resiliently bonded charge air cooler or other heat exchanger." Disclosure, page 1.
providing a header defining openings, said header openings adapted to receive a plurality of tubes;	"Figure 5 ... Tube –to-header joints can be brazed with the rest of the core in the CAB process prior to bonding the tanks in place." Disclosure, page 2; Header "HDR" shown receiving tube "CAC TUBE." Disclosure, Fig. 5, page 5.
providing a tank having an inner cavity, said tank being assembled with said header;	Tank "MAN. TANK" with inner cavity shown assembled to header "HDR." Disclosure, Fig. 5, page 5.
inserting said tubes into said header openings and fixedly attaching said tubes to said header such that said tubes extend through said header openings and open ends of said tubes communicate with said tank inner cavity;	" Figure 5 ... Tube –to-header joints can be brazed with the rest of the core in the CAB process prior to bonding the tanks in place." Disclosure, page 2; Tank "MAN. TANK" shown assembled to header "HDR" shown receiving tube "CAC TUBE" with the ends of the tube communicating with the tank inner cavity. Disclosure, Fig. 5, page 5.
applying substantially uncured fluid sealing material between said tank and said header defining a joint such that said header and said tank are connected by said sealing material; and	"Form-in-Place silicone sealants are applied to the parts in viscous liquid condition and are cured, usually by room-temperature-vulcanizing (RTV), after assembly of the parts. ... Figure 5 ... a flexible tank-to-header joint created by applying a Form-in-Place silicone to the gap between the tank and header." Disclosure, page 2.

curing said sealing material of said joint such that said sealing material provides a flexible, bonded, liquid tight, header-tank joint.

CLAIM 50

A heat exchanger which comprises:

a plurality of tubes having predetermined dimensions, said tubes including an outer surface and being open at one end;

a header structure defining a plurality of openings, said openings receiving said tubes, said tubes being fixedly attached to said header structure;

a tank positioned above said header structure, said tank and said header structure defining a gap therebetween, said gap being adapted to receive bonding material; and

"600°F SILICONE BOND OF TANK/HDR PROVIDES FLEX FOR THERMAL EXP. OF CORE." Disclosure, Fig. 5, page 5.

DISCLOSURE

"[A] resiliently bonded charge air cooler or other heat exchanger." Disclosure, page 1.

"CAC TUBE." Disclosure, Fig. 5, page 5.

"Figure 5 ... Tube -to-header joints can be brazed with the rest of the core in the CAB process prior to bonding the tanks in place." Disclosure, page 2; Header "HDR" shown receiving tube "CAC TUBE." Disclosure, Fig. 5, page 5.

"Figure 6 shows how a formed header, with wells formed around the oversized tube holes, is slipped over the tubes of a headerless core. The header is then flooded with 600F RTV silicone so that the wells fill up and a thin layer is over the entire header." Disclosure, page 3; Plurality of "TUBES" secured in openings in header "HDR" with "RTV SILICONE." Disclosure, Fig. 6, page 5.

Tank "MAN. TANK" shown assembled to header "HDR" with gap. Disclosure, Fig. 5, page 5; Figure 5 ... a flexible tank-to-header joint created by applying a Form-in-Place silicone to the gap between the tank and header." Disclosure, page 2.

"Figure 6 ... The cast or fabricated manifold [tank], sized for a 1/8 inch gap to the header all around, is set in place ..." Disclosure, page 3; Tank "MANIFOLDS" shown assembled to header "HDR" with gap. Disclosure, Fig. 6, page 5.

a sealing member including a cured bonding material which forms a flexible bond between said tank and said header structure.

Figure 5 ... a flexible tank-to-header joint created by applying a Form-in-Place silicone to the gap between the tank and header." Disclosure, page 2; "600°F SILICONE BOND OF TANK/HDR PROVIDES FLEX FOR THERMAL EXP. OF CORE." Disclosure, Fig. 5, page 5.

"Figure 6 ... The cast or fabricated manifold [tank], sized for a 1/8 inch gap to the header all around, is set in place and the edge gap filled with RTV." Disclosure, page 3; "RTV SILICONE" shown in gap between tank "MANIFOLDS" and header "HDR." Disclosure, Fig. 6, page 5.

Accordingly, the inventor's declaration and attached exhibit establish conception of the invention described and claimed in the above referenced application prior to April 4, 2001.

Due diligence from a time before the date of the Jones reference, April 4, 2001, until the constructive reduction to practice of the invention, the May 2, 2001 filing date from which the instant application claims benefit, is also established by the inventor's declaration. The activities establishing such diligence stated in this declaration were as follows:

1. The Disclosure of Exhibit A was submitted by the inventor to the patent law firm of DeLio & Peterson, LLC of New Haven, Connecticut for preparation of the parent of the instant patent application prior to April 4, 2001.
2. On April 9, 2001, the inventor received a draft of the parent application by facsimile from DeLio & Peterson. The inventor reviewed this draft and subsequently returned a copy with his comments.
3. On April 23, 2001, the inventor received a further draft of the parent application by facsimile from DeLio & Peterson.

4. On April 24, 2001, DeLio & Peterson sent to the inventor the completed patent application for his review and signature.

5. On or about May 1, 2001, the inventor returned the executed patent application to DeLio & Peterson, and the parent application was filed with the U.S. Patent and Trademark Office on May 2, 2001.

The continuous activity between April 4, 2001 and May 2, 2001 by the inventor and the law firm working on the patent application clearly constitutes "due diligence" from a time just prior to the Jones reference date to the constructive reduction to practice of the invention at the time of filing with the USPTO. 37 CFR § 1.131.

Since the only reference cited against claims 12 and 50 of the instant application, the Jones patent publication, has been antedated by the enclosed declaration and supporting evidence under 37 CFR § 1.131, it is respectfully submitted that claims 12 and 50 of the application are allowable.

Claim 54

Claim 54 stands rejected under 35 USC § 102 as being anticipated by Collgon U.S. Patent No. 4,467,511. Applicant respectfully traverses this rejection.

Claim 54 recites a heat exchanger with a cured-in-place seal between the tubes and the header, wherein the seal is bonded to the header and not to the tube. The Examiner has cited Collgon for its description that "plate 24 is coated inside chamber with sheet 27 or rubber or similar." Collgon, column 5, lines 53-55.

As the Examiner will appreciate, rubber may be coated onto a surface without necessarily bonding to it. Since Collgon does not disclose how his "sheet" is "coated," or whether a bond is created with the underlying plate, there is therefore no disclosure of a seal bonded to a header, and not to the tube, as applicant claims.

Applicant has added new claim 55, dependent on claim 54, which recites that the header is part of a tank, and the seal is bonded to an exterior surface of the header. Support is found in the specification at page 15, line 13 to page 16, line 3, and in Fig. 4. Collgon discloses only that the sheet 27 is on the interior surface of the header, and therefore does not disclose or suggest applicant's construction wherein the seal is bonded to an exterior surface of the header, but not to the tube. Accordingly, claims 54 and 55 are not anticipated or obvious from the Collgon patent.

Rejection under 35 USC § 103

Claims 2, 3 and 7 stand rejected under 35 USC § 103 as being obvious from Tamura in view of Kato et al. U.S. Patent No. 6,082,439 further in view of Waterman et al. U.S. Patent No. 5,370,175. Applicant respectfully traverses this rejection.

The Examiner has cited the Kato et al. patent for its disclosure of the use of a "silicon rubber type adhesive" in use between a tube and a core plate of a heat exchanger, and taken the position that one of ordinary skill in the art would find it obvious to substitute such an adhesive for the epoxy resin used by Tamura. However, in view of the specific disclosure of the use of epoxy by Tamura, the substitution hypothesized by the Examiner would be contrary to Tamura's teachings. Moreover, Tamura taught against the type of joint bonding described in Kato et al., i.e., bonding with only the tube end surface and not including the fins adjacent the tube end. Since the teachings of the prior art as a whole must be evaluated, applicant's invention as described in claims 2, 3 and 7 is therefore not *prima facie* obvious.

It is respectfully submitted that the application has now been brought into a condition where allowance of the entire case is proper. Reconsideration and issuance of a notice of allowance are respectfully solicited.

Respectfully submitted,



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CERTIFICATE OF MAILING UNDER 37 CFR 1.10

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